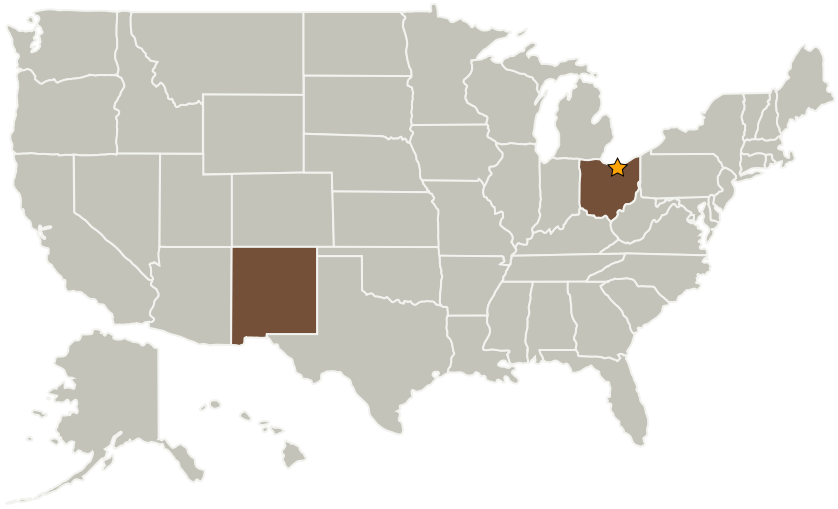
Surface Modification of Exfoliated Graphite Nano-Reinforcements, Phase II

Completed Technology Project (2005 - 2007)

Project Introduction

Phase I results showed that two surface treatments, oxidative plasma and reactive finishes, are effective means of modifying the surface chemistry of exfoliated graphite nanoflakes. The surface modifications provide a more compatible surface energy for dispersion in polymers and create well-bonded interfaces with the polymer matrix. In order to be cost effective for NASA and commercial applications, the surface treatment processes need to be applied on a large scale. In the Phase II program, both treatment methods will be scaled-up to semi-continuous processes. Custom equipment will be fabricated to process large quantities of treated nanoflakes. The resulting treated nanoflakes will be characterized for surface chemistry and morphology and processed into polymer composites and continuous carbon fiber-reinforced polymer composites. The composites will be characterized for conductivity, thermal and mechanical, and diffusion barrier properties. It is expected that these composites will find applications as fuel cell bipolar plates, composite cryogenic storage tanks, and in light weight structures for aerospace, military, and transportation.

Primary U.S. Work Locations and Key Partners



Surface Modification of Exfoliated Graphite Nano-Reinforcements, Phase II

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Surface Modification of Exfoliated Graphite Nano-Reinforcements, Phase II

Completed Technology Project (2005 - 2007)

Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Adherent Technologies, Inc.	Supporting Organization	Industry	Albuquerque, New Mexico

Primary U.S. Work Locations	
New Mexico	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.3 Manipulation
    - TX04.3.4 Sample Acquisition and Handling